جامعة الخليج الطبية

GULF MEDICAL UNIVERSITY

EDUCATION • HEALTHCARE • RESEARCH

Distance Learning Manual

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1. Introduction

The Gulf Medical University (GMU) vision aims to be a leading international Academic Healthcare Institution through the integration of quality health professions education, research, healthcare and social accountability for sustainable community development

GMU has a variety of programs, a diverse student population, and international relationships with other academic institutions, which has increased their appetite to address the distance learning course(s) and program(s). Over the past few years, the COVID-19 pandemic has accelerated the need and necessity to embrace distance learning (DL).

The main concern in DL is the mode of education and management of courses for students and/or the faculty members distributed across geographical locations. At the same time, DL should deliver the same quality of learning, teaching, and assessment as onsite education, including the interaction between students and between students and the faculty member(s).

1.1. Definitions

1.1.1. **Flexible Learning:** Where students are given the freedom to select when and how they learn, and at what pace. In most medical school, this will be within very limited parameters, since students generally enter, progress and exit through the same learning pathway and at the same times. Although some definitions of flexible learning also allow choice of what is to be learned, in medical education flexible learning is more likely to occur against a specific set of mandatory, perhaps supplemented by optional, curriculum outcomes *(Source: WFME standards for DL in medical education 202).*

1.1.2. **Distance and Distributed learning (DDL):**

1.1.2.1. A varied and planned course of study designed and developed to address the curriculum for students who are in different locations away from the central teaching institution, supported by teaching and supervisory staff that are also physically or virtually distributed across those locations. Distance learning can encompass technology-based and non-technology-based educational methods and experiences. Distance learning might refer to an entire course, or a part of it. *(Source: WFME standards for DL in medical education 202)*

1.1.2.2. Distance learning and distributed learning are often used interchangeably, although there are differences between the two.

1.1.2.3. **Distance Learning*:*** Implies that there is a central institution or one campus that the students are distant from, whereas

1.1.2.4. **Distributed Learning**: Implies that both the students and the institution (more than one campus) are distributed.

1.1.2.5. **eLearning:** instruction which involves digital or electronic means of disseminating information or communication between students and instructor. It relies on digital or electronic modes of learning including online use of digital devices (computers, tablets, etc.). eLearning can be used in F2F classrooms, and can be used for remote, distance, online learning, or supplemental.

1.1.2.6. **Online learning:** A type of eLearning designed for and delivered via the internet. Various technologies can be used to mediate the learning and instructional process. Online learning can be employed as part of a blended program, or an online program.

1.1.3. **Compresence**: The state of existing together concurrently, (adj. compresent, adv. compresently). For purposes of our document, two or more entities (students & faculty, for example) are compresent if they are in the same location (a classroom) at the same time.

1.1.4. **Face–to–Face Courses (F2F)** are courses where faculty and students are compresent in one classroom during the course delivery. This is the traditional type of instruction in non-virtual, in-person classroom delivery. Synchronous class sessions are not F2F learning.

1.1.5. **Online Courses** are courses where 100% of the course credit hours are delivered online (either synchronously or asynchronously), this mean all instructional sessions are delivered online.

1.1.6. **Blended Courses** are courses where instructional sessions are mixed between F2F and online delivery. A course is considered a blended course when a certain and well-defined percentage of the course's credit hours are delivered online (either synchronously or asynchronously) and the remaining is delivered in F2F sessions.

1.1.7. **F2F Program:** is a program in which all of its total credit hours are delivered F2F.

1.1.8. **Blended Program:** is a program in which less than 50% of its total credit hours are delivered online, and the rest is delivered F2F.

1.1.9. **Online Program:** is a program in which 50% or more of the program's credit hours are delivered through online mode of delivery.

1.1.10. **Synchronous:** Instructional activities where both instructors and students are engaging in an online learning at the same time, with knowledge and information exchange take place in real time.

1.1.11. **Asynchronous:** Students engage in the same online learning and instructional activities, but at differing times from the instructors.

1.1.12. **Credit Hour Equivalency Metric**: The metric used to calculate equivalence between online learning activities as a replacement for F2F credit hours.

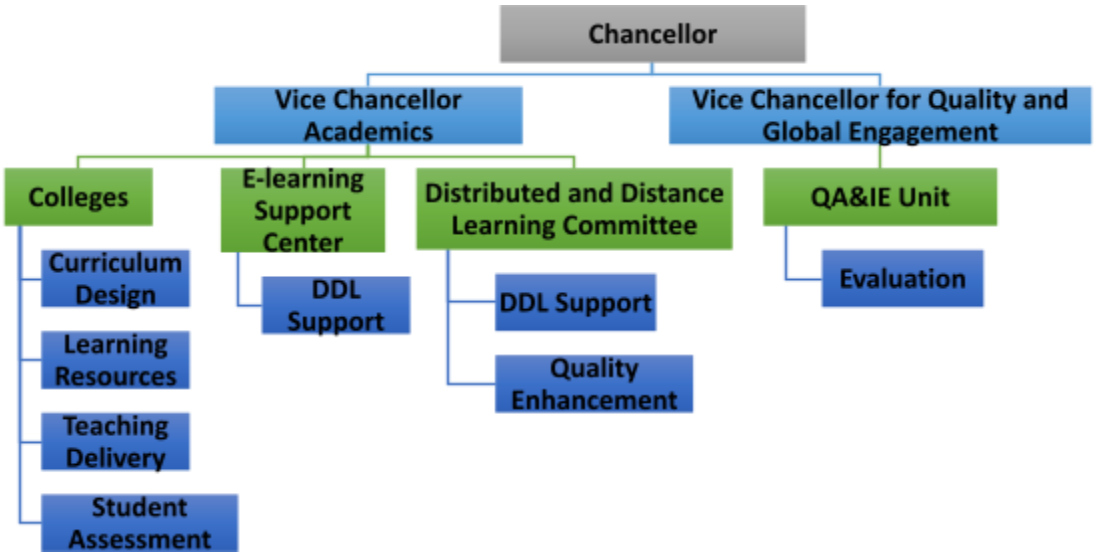
1.1.13. **Flipped Classrooms**: The teaching methodology in which traditional classroom learning experiences (lectures) involving passive knowledge acquisition is instead done "at home" and as "homework" and active student learning is done in the classroom. Flipped classrooms may or may not be blended or make use of eLearning. Flipped classrooms are blended only when less than 50% of the credit hours are allocated to online rather than F2F sessions.

2. Governance

2.1. Scope

This manual covers all program(s) and/or course(s) that are approved to be taught through distance learning.

2.2 Organization Chart



The organizational chart illustrates the responsibilities for DL programs and courses across the University governance structure.

The Vice-Chancellor Academics is responsible for DL in the University through three entities; the DL committee, E-learning Support Center and Colleges. DL committee has direct responsibility overall governing and oversight of the implementation of all DL activities at GMU. the Vice-Chancellor for Quality and Global Engagement is responsible for ensuring the quality of the DL programs and courses.

2.1.1. Materials development

The development of courses syllabus and materials is the core responsibility of the college/program in liaising with the curriculum, DL, Assessment, and Learning Resource Committees.

2.1.2. Program delivery

The program delivery is the responsibility of the program director and team in collaboration and support from the e-learning support center. The DL committee shall advise the colleges and programs on the best technology suitable to the programs' specific learning outcomes.

The course delivery can be synchronous (e.g. live webinars), asynchronous (e.g. recorded voice-over-slides) or a hybrid mode based on the nature of the course and its learning outcomes.

a. Each faculty member shall be granted a greater workload of 15% of the credit hours per semester per course for out-of-classroom preparation
b. The workload shall include the time allocated for the weekly synchronous activities.
c. The synchronous activities shall not be less than 30% of the total credit hours allocated to the course in a fully online program.
d. In blended learning the Face-to-face shall be more than 50% of the total credit hours of the program. The percentage of the synchronous and asynchronous activities for the remaining credit hours shall be determined by the program according to the academic need and has no specific percentage.
e. The asynchronous activities completed by students shall be under faculty supervision and followed by comprehensive feedback to be considered in the workload
f. Students shall be actively participating in the course activities through live interaction, presentation, online team-based learning or through the submission of weekly formative assignments.

g. All live sessions shall be recorded and uploaded to the course page on the University Learning Management System.

Workload calculations:

a. Online/blended learning: 1 contact hour in synchronous activity for 15 weeks= 1 Credit hour

3 contact hours in asynchronous activity for 15 weeks = 1 Credit hour

b. The synchronous activities shall not be less than 30% of the total credit hours allocated to the course in a fully online program.

c. In blended learning the Face-to-face shall be more than 50% of the total credit hours of the program. The percentage of the synchronous and asynchronous activities for the remaining credit hours shall be determined by the program according to the academic need and has no specific percentage.

2.1.3. Learner support

The student support system in a DL context is a key element of the educational process and system.

The principles of student support in DL include:

- Establishing clear, two-way communication between students and staff (academic and managerial).
- Using accessible platforms.
- Creating new pathways to student support which do not depend on campus based face-to-face drop-in services.

The responsibility is divided among different departments,

- Course coordinator; to provide academic support.
- Technology center; to provide training and access to different platforms
- Student Happiness Centre, which is aiming at enhancing students' overall well-being and providing students with information, advice, guidance, or referral regarding any concerns or complaints, as well as liaison between students and different college/university departments.
- The workload shall include the time allocated for the weekly synchronous activities.

2.1.4. Evaluation

The QA&IE Unit shall monitor and systematically evaluate the DL courses and/or programs effectiveness. The program director shall use the evaluation results in planning, and continuous quality enhancement.

3. Faculty roles and responsibilities

The DL courses have to comprise technology-based materials, library resources and textbooks, information resources, online students' interaction, and between students and faculty member(s).

3.1. Faculty Role and Responsibilities in developing DL programs and courses

The faculty shall

3.1.1. Identify the optimum educational methods that will be used to ensure a planned variety of learning processes and methods.

3.1.2. Maximize the use of the available resources for DL design and development.

3.1.3. Ensure that the preparation of courses and lesson plans are based on University's academic standards.

3.1.4. Ensure that the content of the course is deliverable through DL.

3.1.5. Understand the physical, technological, and social contexts of students who will be learning through DL.

3.1.6. Prepare and provide appropriate DL resources including:

- Voiceover Powerpoint lectures
- Discussion Forums on Moodle
- Links to relevant resources

3.1.7. Ensure that the uploaded resources are free of plagiarism and copyright infringement.

3.1.8. Provide a clear schedule for the delivery and assessment of DL sessions.

3.2. Faculty Role and Responsibilities in Implementing DL programs and courses

The faculty shall

3.2.1. Ensure that the quality and rigor of DL (e-learning and online) learning and assessment is as per CAA standards.

3.2.2. Monitor student attendance during DL and report to the academic advisors for appropriate actions as needed. Attendance is mandatory for not less than 80% of the program, this is applied to all modes of deliveries.

3.2.3. Deliver the course content as per the planned syllabus.

3.2.4. Maintain the duration and frequency of DL sessions, i.e., equivalent to Credit Hour and Contact hours as per the Syllabus.

3.2.5. Conduct formative and summative assessments and provide meaningful feedback to enhance students' learning.

3.2.6. Prepare and timely submit course files as per CAA annex 16.

4. Mode of Delivery

GMU is implementing different e-learning and online course delivery approaches, such as: case-based discussion, simulation, Virtual-patient learning, online PBL, etc.

Each mode of delivery can have different means of interactions either asynchronous or synchronous.

4.1. Online Mode

The learning experiential can be applied fully online mode. The students and the faculty members interact online in this type of learning. In this form of learning, the students take a course without physically visiting an actual classroom.

The interaction mode is a combination of synchronous tools and asynchronous tools. The media used such as web conferencing, discussion forums, social media, e-portfolios and multimedia for reporting, and remote labs for experimental work.

4.2. Blended Mode

Where some, but not all, of regular classroom time is replaced by distance-based activities. It is a combination of on-site (face-to-face, more than 50%) and distance learning. The interaction between faculty and students may be synchronous and asynchronous.

4.3. Interaction among learners

4.3.1. ***Synchronous*** means used in real time, requiring participants and instructors/facilitators to meet virtually at the same time from different places. One of the most used tools used for synchronous learning is webinar tools, such as Zoom, and the virtual classroom, such as Adobe Connect.

4.3.2. ***Asynchronous*** means self-paced, and therefore participants can use provided asynchronous learning elements, such as online audio and video and discussion forums, at the time and place of their choosing.

4.4. Media used for course delivery

4.4.1. ***Chat:*** activity allows course members to hold real-time, text-based conversations with other course members. Multiple chat rooms can be set up for the same course.

4.4.2. ***Database:*** activity allows the teacher and/or students to build, display and search a bank of records. The instructor designs the format and structure of these entries which can include images, files, URLs, numbers, text, etc.

4.4.3. ***Forum:*** Instructors and students can communicate and collaborate using Forums, sometimes called "discussions." Instructors can create topics or, depending on the Forum type, allow students to originate topics, to which course members can "post" a reply.

4.4.4. ***Glossary:*** activity allows users to create a list of definitions, like a dictionary, that course participants can search or browse. Teachers can restrict access to a glossary so that only they can create entries, or they can allow students to add new entries as well.

4.4.5. ***Wiki:*** is a web page (or set of web pages) that class members can create together, working directly in the browser without needing to know HTML. A Moodle Wiki starts with one front page while any contributor can add additional pages.

4.4.6. ***Workshop:*** is a peer assessment activity with many options. Students submit their work via an online text tool and attachments. Students receive two grades in this activity, one for their own work based on peer reviews and another for their peer assessments of other students' work

4.4.7. ***Video Conference Platform (ZOOM):*** Teachers are currently utilizing Zoom (a licensed version) as a video conferencing tool to host distance learning classes or virtual office hours with students.

5. E-learning materials development procedures and processes

5.1. Project Management

GMU shall:

5.1.1. Develop and maintain an e-learning environment, consisting of a learning or course management platform, related communications tools, and support resources/services, which is adequate to meet the demands of its e-learning programs and courses, and of the faculty members and students involved in e-learning.

5.1.2. Maintain sufficient internet bandwidth, server capacity and staff to support the operation of the e-learning environment.
5.1.3. Provide training to faculty, staff and students involved with e-learning programs and courses in the operation of the e-learning platform.
5.1.4. Ensure that faculty members teaching in e-learning courses have the necessary equipment, software, communications tools and internet connectivity and bandwidth to develop and deliver the courses they teach, and to communicate with students.
5.1.5. Provide sufficient technical support to students and faculty to ensure the effective delivery of e-learning programs and courses;
5.1.6. Ensure that students have access at all times to the e-learning platforms and resources.
5.1.7. Ensure that students entering the programs are informed of the nature and potential challenges of learning in an online environment;
5.1.8. Ensure that students are evaluated to determine whether they have the necessary information technology skills to succeed in an e-learning program;
5.1.9. Ensure that students are informed as to the minimum requirements for hardware, software and internet connectivity for the program or course;
5.1.10. Ensure that students are informed of the expectations for their participation in the program's or course's online community of learners, including interacting with other students and with faculty or tutors, and the channels through which interaction takes place;
5.1.11. Ensure that students are aware of the e-library and other learning resources, and as necessary receive training in their use;
5.1.12. Ensure that students are aware of all support services relevant to e-learning available to them including mentorship and academic advising.
5.1.13. Ensure that students are informed as to what portions of the program require their physical presence, if any, including face-to-face course meetings, tutorials or help sessions, field activities and examinations; and the date, time, location and arrangements provided for these.
5.1.14. Have appropriate security measures to protect the integrity and confidentiality of student data and all course data and analytics within the e-learning platform and of student information maintained within the comprehensive e-learning environment.

5.2. Instructional Design

Guidelines for Instructional Design

The following shall be considered during design of DL courses and its materials:

- A clear and logical learning pathway set out through the course learning outcomes (CLOs).
- Learning materials that ask students to use the information they are learning, in assignments, exercises, activities, and to receive comprehensive feedback on those.
- Provide an appropriate level of interaction between the students and faculty member(s) through live or virtual/ synchronous or asynchronous.
- Provide accessibility to the faculty member and/or supervisor who supports the learning process by providing further resources, explanations, constructive and comprehensive feedback.
- Creation of social presence, chatting room, and discussion groups among students to interact and exchange ideas, discuss progress and problems, and find solutions.
- Continuous structured effective feedback on the learning process to build into the enhancement of the materials, assignments, and interactive events.
- The sequence of the course(s) shall be logically addressed to achieve the course learning outcomes and then subsequently the program outcomes.
- Current learning builds on and relates to prior learning, regardless of the education method(s) (i.e. on-site or DL) in the prior art.
- Develop a clear timeline and milestones across elements to have a coherent learning pathway for all students
- There is a flow of rich, varied, and appropriate learning methods and resources for (planning, application, use of knowledge, skills, and attitude, the feedback on learning for students, and elements that enable monitoring and achievement of student progress).

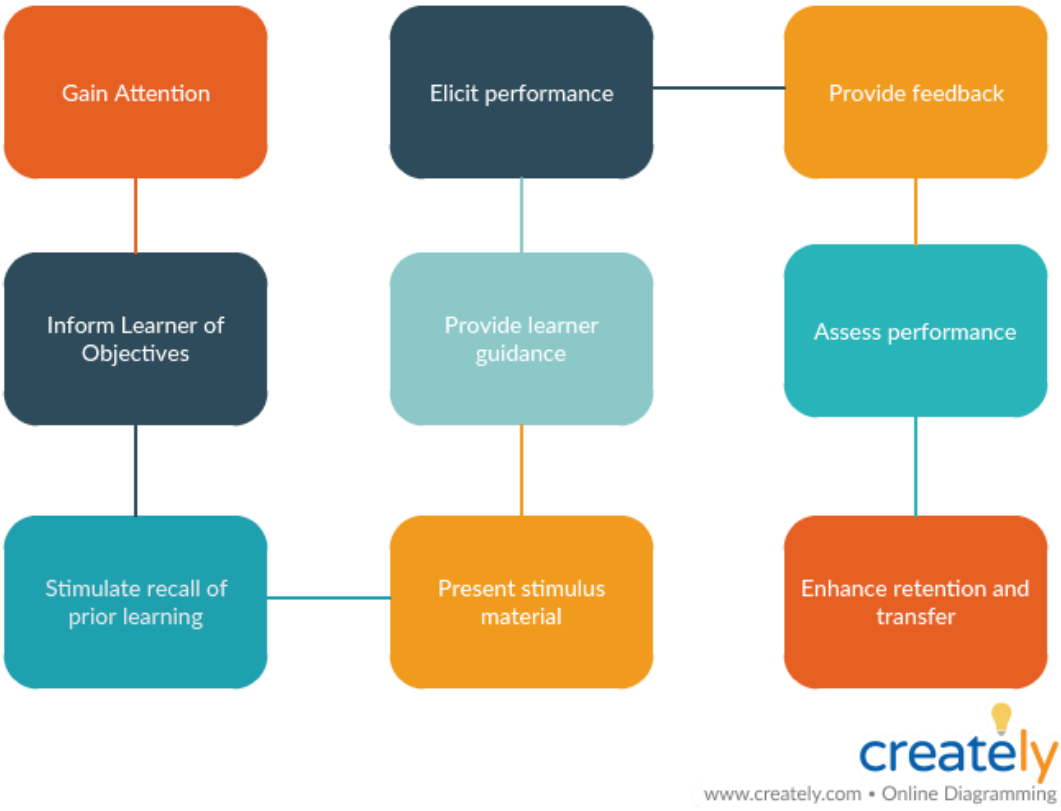
Procedure of Instructional Design:

Instructional design Follows the Gagné's Nine Events of Instruction[1]:

1. Gain the attention of the students through stimuli such as a surprise, thought-provoking question, etc.
2. Inform the students of the objectives or outcomes of the lesson before the instructions are given.
3. Stimulate recall of prior learning by asking questions about the experience from the past. By relating to this past knowledge, they can easily make sense of new knowledge.
4. Present the content to the learners in a way that is easy to comprehend

[1] Ali S, Ali L. Efficacy of Gagne's Nine Events of Instruction in improving the performance of undergraduate medical students. Academy of Health Professions Educators. 2015;1(2):65-8.

5. Provide learning guidance with tutorials, case studies, examples, infographics, etc.
6. Elicit performance by helping them internalize new knowledge through activities that encourage them to recall and use that knowledge.
7. Provide feedback on the performance of students to facilitate learning.
8. Assess performance by testing whether the expected outcomes have been achieved.
9. Enhance retention and transfer to the job. Help students internalize new knowledge with techniques like concept maps, summarizing, etc.



[2]

5.3. Content Creation

Guidelines for Building a course: Link

Guidelines for Customizing a course (Link): GMU e-learning support center has developed a platform to help faculty members to*:*

1- Editing Course Sections: Link
2- Uploading Files: Link
3- Creating a forum: Link
4- Creating virtual office hours: Link
5- Add Resources to the course page: Link

[2] https://creately.com/blog/diagrams/instructional-design-models-process/

6- Taking attendance: Link
7- Gradebook: Link

Creating voice-over-slides using Edpuzzle for Flipped Classes:

What is Edpuzzle: Link

How to use Edpuzzle: Link

The course coordinator shall:

1- Upload the course syllabus to the University Learning Management System at the beginning of the semester.
2- Ensure the availability of online learning resources.
3- Create "Ask Your Faculty" forum on the course page to ensure effective and prompt communications with students.
4- List the learning outcomes of each online lesson.
5- Upload the learning materials and other supporting resources 3 days at least before each session.
6- Create online formative assignments to ensure achievement of course learning outcomes on a weekly basis.

5.4. Design of assessments

Exam-Based Assessments[3]:

1- Open-book Exams
2- Take-Home Exams
3- Multiple Choice Questions
4- Virtual OSCE (VOSCE)

Coursework-based Assessment: GMU follows both formative and summative assessments. The assessment categories presented below can be categorized into formative or summative assessments.

1- Portfolio: It is a consolidated documentation of student academic assignments and other forms of educational evidence assembled together with the following objectives:

a. Evaluation of quality of the coursework

b. Tracking student academic achievement

[3] https://www.ucl.ac.uk/teaching-learning/assessment-resources/designing-effective-online-assessment

c. Ensure that students achieve the Course Learning outcomes by meeting all academic requirements for courses, grade-level promotion, and graduation.

d. Facilitate student reflection on their academic goals and progress

e. Establishing mechanisms to archive student course work.

2- Reflective Assignments: Reflective assignments are used to examine students in their response to a new experience or piece of writing. It aims at allowing students to engage in writing while they are reflecting, about their observations, impact on them from what they experienced and how differently things could have been done

3- Collaborative/Team Assignments: These assignments offer students opportunities to work together in groups using thinking and sharing ideas to achieve a common goal.

4- Oral Exams: These exams involve assessing a student's knowledge by verbally asking questions and the student responds with his answers verbally in the presence of at least one (1) examiner.

5- Presentation: Presentation assessments are used to assess students for different skills including speaking, reading, writing, and listening. Good student performance in presentations reflects student's confidence and communication skills to be able to structure and express their ideas clearly.

6- Video/Audio Recording: Audio and video assignments are used to allow for the assessment of specific skills that cannot be captured by other assessment methods such as presentation and interview skills.

Procedures for Designing Assessment:

- Creating Moodle Assignment: Link
- Creating Turnitin Assignment: Link
- Building Question Bank on Moodle: Link
- Creating Exam on Moodle: Link
- Creating Exam on ExamSoft: Link

The DL strategy should be evaluated and/or reviewed periodically, for identifying any areas that need to be improved, as follows:

i. Short-Term Evaluation: To be conducted on an annual basis.

Demonstrates that the short- plans for IT performance, upgrading, and enhancement of the online/blended programs and support units include

- Continuous evaluation improvement of eLearning services, including staffing, software, SIMM labs, etc.
- Foresight: evidence-based prediction of future technological and pedagogical systems.
- Consultation with all stakeholders at all stages.
- Quality Assurance reviews 'close the loop' on evaluation of the online/blended learning systems, resources and delivery based on an online/blended learning plan which is approved by the University council.
- The plan is reviewed annually by program leadership
- The equipment and software maintenance and replacement/upgrading plans and associated budget.
- Feasibility studies are undertaken for all new online/blended learning programs.
- Project-based budget planning is linked between the requirements of continuous online/blended learning program/course development, staffing, and facilities upgrades in support units as well as academic units.

ii. Long-Term Evaluation: To be conducted every 5 academic years.

The procedure of DL evaluation is listed below.

The Virtual Learning Environment (VLE) should be evaluated and ensure the effectiveness of the procedures

I. Virtual Learning Environment (VLE), consisting of
   - Learning or course management platform
   - Communications tools (e.g., for e-mail, videoconferences or blogs)
   - Support resources/services (e.g., library resources)

II. The VLE includes or based on a robust, secure and stable Learning Management System (LMS) (e.g., Blackboard, Moodle, etc.).

III. The institution is confident that internet access to the LMS is available for all students.

IV. Courses do not use insecure apps outside the LMS as main source of communication between professor/student or student/student (e.g., WhatsApp, WeChat).

V. When apps or software outside the VLE are used, the data is stored for QA purposes.

VI. Policies are in place to maintain the security and privacy of the VLE ecosystem.

VII. All discussions, videos, tutorials, etc., be undertaken through access to the LMS where possible, particularly within a program.

VIII. It maintains a secure "single point of access/system" for students involved in online/blended programs.

6. Assessment policies

Non-Proctored Assessments:

GMU has an assessment policy to ensure that assessment and grading tools are aligned with course learning outcomes and the level of the course. The developing and implementing rubrics for all assessment tools, and providing a clear, written guidance on assessment methodologies and tools and grading in order to ensure comparability and consistency with the approaches to teaching, learning and assessment are the core of the assessment system in GMU. The assessment methodologies must be appropriate for the nature and level of course and its content and mode of delivery. Thus, in DL context there are strategies needed to be sure that what is submitted is the students' work first then following the GMU assessments policy.

The following practices are followed to ensure assessment integrity:

6.1. At the beginning of the course, students give an article or a choice of articles to read. Requesting them to
   6.1.1. Write a brief paragraph about the main idea.
   6.1.2. Identify 4-5 key points used to support the main argument.
   6.1.3. Write a brief paragraph about the value of reading this article for someone studying their particular course.

This early writing exercise (or other) provides an authenticity to the substance and intent of the course, will generate some student writing prose that can be used to compare against the writing style in an essay they submit later in the course.

6.2. Stage the writing process: Requires students to incrementally submit in stages the development of their final product by given dates. Use a rubric to give feedback that the student must incorporate into the final product.
   6.2.1. Stage 1: Students submit the title and topic of their essay and their plan for writing it.
   6.2.2. Stage 2: Students produce a progress report, summarize their learning to date and the challenges they are experiencing.
   6.2.3. Stage 3: Students submit a work in progress that might include: questions their reading and writing have generated, and they should indicate the kind of feedback they are seeking.
   6.2.4. Stage 4: The final product indicating where and how the feedback has been used. This is called conditional feedback. The final grade is conditional on students having read and used the feedback provided.

Same staged process works very well with projects/research

- focus of the study and its rationale and plan
- the literature reviews
- the method for the project
- the analysis of the findings
- the entire project with conclusions, recommendations, etc.

The most important verification point in this strategy is indicating how they have used the feedback given at each stage.

6.3. Producing a portfolio of work that adopts the course learning outcomes as a reporting structure. The presentation of a portfolio should have two elements.

6.3.1. Uses the learning outcomes and explains to the assessor which pieces in the portfolio are evidence of the achievement of one or more learning outcomes. Each of the learning outcome should be no longer than about 200-300 words. Each course should have no more than 3-5 learning outcomes.

6.3.2. The second element is the evidence. This may come in the form of a transcript of a discussion in which a conflict or a problem is solved; a piece of illustrative creative work; a description of critical incident that illustrates a key concept; a video clip of mastery of some skill etc.

6.4. Teamwork: IT affordances now make it easy for student to meet, plan, problem solve and execute tasks online. As always with groups, it is important that features of good teamwork feature in the assessment. For that reason, students should be asked to evaluate the team processes, including themselves and their peers in dividing up and carrying out the tasks.

6.5. Similarity Detection: Refer to the "Student Academic Integrity Policy"

Proctored Assessment

The course coordinator shall:

1. Prepare an exam blueprint to show the alignment of questions to the course learning outcomes and submit it to the College Assessment Committee.
2. Create the exam and upload the questions on the University examination platform 5 days at least before the exam.
3. Keep all questions and options randomized.
4. Prepare proctoring links and share it with invigilators and students one day at least before the exam.

Invigilators shall

1. Open the proctoring software 15 minutes before the exam.
2. Ensure that all students open their camera and microphone during the exam time.
3. Record the whole session.
4. The recorded sessions shall be forwarded to the assessment committee to be checked if there is misconduct/cheating reported by the invigilator.
5. Ensure that students are not using headphones and their face and shoulders are appearing in the camera.
6. Not allow students to leave the proctored session except at the end of the exam time or after all other students submit the exam.

The College Assessment Committee shall

1. Ensure that the course coordinator has created the exam and kept it password protected and hidden.
2. Review the quality of questions and its alignment with the course learning outcomes as per the exam blueprint prepared by the course coordinator.
3. Check the recorded invigilated session if there is misconduct/cheating reported by the invigilator.

Students shall:

1. Join the proctored session 15 minutes before the exam.
2. Open the camera and show the surroundings before starting the exam.
3. Keep the camera and microphone open during the whole exam session.
4. The camera angle shall show clear view of the student and his screen simultaneously.
5. Keep their face and shoulders appearing within the camera frame.
6. Not leave the proctored session except at the end of the exam time or after all other students submit the exam. Permission shall be taken from the invigilator before leaving.
7. Be sitting in a room with good lighting.
8. Keep the room surroundings completely silent.
9. Report any technical problem immediately to the invigilators and work with them to address it.

7. The E-Learning Environment

Online learning and the successful use of technology in courses is a thriving part of the educational experience at the Gulf Medical University, The Technology center complimented various support services in the Campus.

7.1. Hardware

Server Configuration

- AWS Cloud - m5a.2xlarge-Linux-US East(Virginia) -AWSGMU.cloudhostdns.com
- Reserved Instance: 1 Yr All Upfront Reserved
- 8 Core Processor
- 32 GB RAM
- EBS Volumes: 1500 GB
- EBS Snapshots: 1500 GB
- Elastic IPs: 2 IP Address
- S3 Standard Storage: 800 GB
- Amazon Route 53 Service
- Amazon CloudWatch Service (US East (N.Virginia))
- AWS Data Transfer Out: 500 GB/month for
- EC2 & 300 GB/month for S3
- Control panel: cPanel for 5 Users
- Managed services

7.2. Software components

7.2.1. Virtual Learning Environment: Moodle is the core of GMU's virtual learning environment. Moodle provides a space where lecturers and students can communicate with each other when not in a physical classroom. Moodle is the hub of other learning technologies used to support teaching and learning across the University, such as Turnitin. All university courses have a presence on Moodle. A typical course will contain lecture materials; resource and reading lists; links to external resources such as articles, websites, and videos; and activities such as discussion forums, assignments, and self-tests etc. Moodle interfaces with a variety of other University systems and is being developed and extended specifically to suit the University's needs.

7.2.2. Features:

7.2.2.1. Easy and secure environment for instructors to post course content online.

7.2.2.2. Wide collection of traditional instructional tools, including discussion forums, online quizzes, drop boxes for assignments, live chats, and online grade books.

7.2.2.3. Student-centered collaborative tools include Wiki, Workshop, Glossary, and Database activities.

7.2.2.4. Integrates with other university services (e.g. Google Workspace), as well as with external services (e.g. YouTube, Vimeo, Open Education resources), and with publisher educational resources.

7.2.3. Browser Recommendations for Moodle: The following browser recommendations and settings will improve your experience using Moodle and ensure access to the activities and tools in your Moodle courses.

7.2.4. Browser Versions: For security reasons, E-Learning Center recommends updating browsers to the most recent version for your operating system.

7.2.5. Browsers and versions: Technology center in GMU recommends that you use the latest version of Chrome, Firefox, Internet Explorer, Microsoft Edge, or Safari for the best Moodle experience.

7.2.6. Moodle may also operate on other browsers, but with qualifications.

7.2.6.1. Enable Cookies

7.2.6.2. Enable Javascript*

* some devices such as Smartboards, certain tablets and PCs with touch screen capabilities may exhibit problems with Moodle's drag-and-drop features. If you experience problems with such devices, we recommend that you use a desktop computer when you need these features. You can also turn off Javascript in your browser (see below) and use the alternative interface instead of drag-and-drop. For more on Moodle's drag-and-drop features

7.2.7. Instructions for browser settings for are available here:

7.2.7.1. Firefox help: http://support.mozilla.org

7.2.7.2. Chrome help: http://www.google.com/support/chrome/?

7.2.7.3. Internet Explorer help: http://support.microsoft.com/en-us/products/internet-explorer

7.2.7.4. Microsoft Edge help: https://support.microsoft.com/en-gb/products/microsoft-edge

7.2.7.5. Safari help: go to Safari > Preferences. The settings are located on the Security and Privacy tabs.

7.3. **Examsoft:** GMU is using Examsoft to assess the courses and programs outcomes, which enables faculty members to download the assessment-related report immediately after the exams to take appropriate actions for the enhancement of learning and assessments as well.

7.4. **Video Conference Platform (ZOOM):** Video conferencing software with license has been provided to the faculty and Staff for conducting online classes and Meetings. Zoom has made a lot of updates to their software in terms of security in recent months to ensure a safe and secure online learning experience for everyone. They are also known as probably the most user-friendly platform and they've also produced a number of resources for teachers who are new to using video conferencing. Teachers are mainly utilizing Zoom as a video conferencing tool to host distance learning classes or virtual office hours with students. In GMU we are using Zoom Software as the primary video conferencing or Live Streaming tool.

7.5. **Blue Software**

The university administers all its evaluations/surveys through an evaluation/survey platform named Blue version 7.0 (The Experience Management Platform, Explorance, Canada) which is administered by the Quality Assurance and Institutional Effectiveness (QA&IE) Unit. The platform has successfully met the challenges faced with the traditional systems and has resulted in better outcomes leaving adequate time for concerned departments to focus on outcomes and to plan for improvement. It generates customized reports to facilitate the planning and decision making process. The following are examples of the surveys conducted using Blue software

7.5.1. Student satisfaction with faculty
7.5.2. Student satisfaction with courses
7.5.3. Student satisfaction with university services
7.5.4. Freshmen survey
7.5.5. Graduate exit survey
7.5.6. Faculty satisfaction with university services
7.5.7. Admin satisfaction with university services
7.5.8. Hostel survey
7.5.9. Stakeholder evaluation of QA&IE Unit
7.5.10. Mentorship reports

Note: In most browsers (not Safari), you can make an exception for Moodle if you don't want to use these settings for all websites.

Recommended & Minimum Computer Configurations

To have efficient E-Learning resource at GMU the Technology center requires having the following:

Windows Devices:

For students, our recommendations and minimum system requirements are meant to provide general guidelines on which computer configurations work best in the Gulf Medical University computing environment. We recommend checking with the department to see if it requires specific computer configurations.

7.5.11. Laptop Computers

- Recommended Configurations

Processor (CPU):	Intel Core i7 (10th generation or newer) or equivalent
Operating System:	Microsoft Windows 10 Professional x64 or Windows 11 x64.
Memory:	16 GB RAM
Storage:	1TB or above internal storage drive
Monitor/Display:	14" LCD monitor, resolution of 1600 x 900 or better.
Network Adapter:	802.11ac 2.4/5 GHz wireless adapter
Other:	Internal or external Webcam, lock, carrying case, external hard drive for backups

- Minimum Requirements: We recommend the following minimum computer configurations which you can use to connect to the campus-wide network. Note: The following lists minimum requirements that allow for network connectivity and other basic functions. If you are planning on purchasing a new computer, please use the recommended configurations above.

Processor (CPU):	Intel Core i5 (8th generation or newer) or equivalent
Operating System:	Microsoft Windows 10 x64
Memory:	8 GB RAM
Storage:	512 GB internal storage drive
Monitor/Display:	13" LCD monitor
Network Adapter:	802.11ac 2.4/5 GHz wireless adapter

Other:	Lock, carrying case

Desktop Computers

Recommended Configurations: We recommend systems that meet or exceed the following specifications:

Processor (CPU):	Intel Core i7 (Tenth generation) or equivalent
Operating System:	Microsoft Windows 10 Professional x64 or Windows 11 x64.
Memory:	16 GB RAM
Storage:	512 GB internal Solid-State Drive (SSD) or 1 TB internal HDD
Monitor/Display:	24" LCD monitor
Network Adaptor:	802.11ac 2.4/5 GHz wireless adapter
Other:	Webcam, lock, external drive for backups

Minimum Requirements: We recommend the following minimum computer configurations.

Note: The following lists minimum requirements that allow for network connectivity and other basic functions. If you are planning on purchasing a new computer, please use the recommended configurations above.

Processor (CPU):	Intel Core i5 (8^{th} generation or newer) or equivalent
Operating System:	Microsoft **Windows 11 x64** or Microsoft Windows 10 x64
Memory:	8 GB RAM
Storage:	500 GB internal storage drive
Monitor/Display:	15" LCD monitor
Other:	802.11ac 2.4/5 GHz wireless adapter

Apple Devices:

In general, we recommend an iMac or MacBook with these technical specifications:

Processor (CPU)	Laptops - Apple M1 or M1 Pro processor
Memory (RAM)	16 GB or more
Storage	512 GB or more
Display	13" display with a minimum 2560 x 1600 resolution

Find your current Mac's specifications to see if your current computer meets these specifications. If not, consider upgrading.

Note – Computers that only meet the minimum specifications may experience performance or stability problems while running video conferencing apps such as Zoom/GOTO Meeting ,Teams or Google Meet with other applications.

iPad

Our IT echo system supports Apple's family of iPads, including iPad Pro, iPad Air, and iPad Mini. The operating system, iOS, and standard third-party apps are fully supported.

You can use iPads with Windows computers but review our recommended tablet options if you prefer a non-iPad tablet.

iPad Pro and Apple Pencil come at an additional cost but provide better performance and additional input options.

Note – iPads or Android Tablets are not a substitute for a portable or desktop computer; they cannot be used for some tasks, such as taking exams, and are not well suited to other tasks such as accessing file servers or heavy editing needs.

Please note that ExamSoft does NOT support any of the following:

- **Chromebooks**
- **Android devices**
- **Cell phones**

Note : Any multi-screen or VGA Splitter attached to your device will prevent you from taking exams.

Tablet

Tablets are of growing interest in the classroom environment and are an innovative method for notetaking. When paired with a keyboard, tablets that meet the above requirements are sometimes even used as a replacement for a laptop. New tablet computers come with Windows, iOS or Android operating systems. Capabilities and the number of programs available depending on the operating system choice and the hardware of the device. Consult with the E-Learning Center Department if you are unsure about the need for a tablet in your field of study.

Note – iPads or Android Tablets are not a substitute for a portable or desktop computer; they cannot be used for some tasks, such as taking exams, and are not well suited to other tasks such as accessing file servers or heavy editing needs.

If you have specific questions about tablet computer configurations, please contact the E-Learning Center.

Internet access

- High-speed Internet connection with a minimum download speed of 5Mbps
- Wired Internet connection if possible or a wireless connection in close proximity with the strong wireless signal from your wireless router

For on-campus wireless, your device must be able to connect to a WPA2 Enterprise network.

Recommended Peripherals

- Webcam - may be integrated into your laptop or tablet
- Microphone - may be integrated into your laptop, tablet, or headset
- speakersSpeakers or headphones - may be integrated into your device

Recommended system specification summary for E-Learning.

Device	**RAM**	**Storage**	**Processor**	**Internet**	**Camera**
Windows	8 GB	1TB	i7 10th Gen	5MB/s download speed or above	1080p or above
Mac	8 GB	500 GB	Apple M1 or M1 Pro	5MB/s download speed or above	1080p or above
Android Tab **(not acceptable for exams)**	8 GB	256GB	Android 11.0 or newer	5MB/s download speed or above	1080p or above
Ipad	8 GB	256GB	IOS 15.3 or newer	5MB/s download speed or above	1080p or above
Mobile Phone **(not**	8GB	256GB	Android 11.0 or newer	5MB/s download speed or above	1080p or above

acceptable for exams)					

Note: If you choose to buy any device, consider how long you expect to use the device and choose the specification, even if the initial purchase will be more expensive. The above-recommended specifications are high end for E-Learning purposes which can help you maintain the device for 5 years.

8. Physical Sites Supporting E-learning

8.1.E-learning Support Center

E-Learning Support Center in GMU supports digital teaching and learning innovation and the use of technology in the classrooms and research center. The E-Learning Center was established to help faculty design and build engaging and effective blended courses through the adoption of best practices for teaching and learning with technology.

8.1.1. E-Learning Center Goals

8.1.1.1. Create a basis of multiple eLearning platforms and services to students, professors and academic supporting staff.

8.1.1.2. Promote and improve the methods of eLearning among learners.

8.1.1.3. Enable the opportunities of research and innovation in the eLearning field.

8.1.1.4. Provide professional training in e-Learning to strengthen the overall learning outcomes and teaching techniques in different E-Learning technology subjects.

8.1.2. E-Learning Services:

8.1.2.1. Moodle LMS: The policy of E-learning using the University Learning Management System (LMSs) is an effort to support eLearning and the course learning outcomes. Moodle is an open source learning management system used by hundreds of millions of learners worldwide, E-Learning Center provides complete LMS guidance and support to students, Faculty and Academic staff in GMU.

8.1.2.2. **Email Service:** To enable the smooth communication through the university, the IT Department provides effective Email Services to Students, Faculty and Staff.

- Students are given an email address with the format **<<Registration Number>>@mygmu.ac.ae.**
- Staff are given an email address based on their name, normally in the format : <<**Name@gmu.ac.ae>>.**

8.1.2.3. Video Conference Platform (ZOOM): Video conferencing software with license has been provided to the faculty and Staff for conducting online classes and Meetings. Zoom has made a lot of updates to their software in terms of security in recent months to

ensure a safe and secure online learning experience for everyone. They are also known as probably the most user-friendly platform and they've also produced a number of resources for teachers who are new to using video conferencing. Teachers are mainly utilizing Zoom as a video conferencing tool to host distance learning classes or virtual office hours with students. In GMU we are using Zoom Software as the primary video conferencing or Live Streaming tool (Link to Zoom Tutorials).

8.1.3. **Smart Classrooms:** The IT Department has installed and maintained most advanced digital learning devices (Smart Boards, Interactive Projectors, Webcams, Audio Systems etc.) in Lecture Halls, Discussion Rooms, Laboratories and Conference Halls etc.

8.1.4. Web Casting & Studio Setup: In GMU, Multiple online events are scheduling simultaneously, IT department having a major role to conduct these events, GMU has developed a high standard Media Studio where the students and faculties can stream their events and activities, GMU has appointed a professional photographer cum Video Editor to produce high standard photographs and videos.

8.1.5. E-library

GMU Library provides e-portal services (Link) for the electronic resources. GMU users can access 'Electronic Resources' through the e-portal with their login credentials (username and password).

Library E-Portal: Knimbus is an integrated platform for e-Resources. Knimbus provides a powerful customization tool for librarians to transform their library into a customized e-Library portal. Knimbus is a single search platform with great filtration methods for information available. It's providing open access resources in one place.

List of Subscribed Online Databases (10)

GMU users can access 'online databases' through the library e-portal with their own username and password. Library E-Portal: https://gmulibrary.com

Clinical Key Database

'Clinical Key' is a medical search engine & database tool owned by medical and scientific publishing company Elsevier. Clinical Key was developed by Elsevier's Global Clinical Reference (GCR) team. Its covered 690 journals and 1066 e- Books

Access Pharmacy: is an online curricular resource designed to meet the changing demands of pharmacy education. A flexible resource, Access

Pharmacy allows students to select a core curriculum topic, browse by organ system, review textbooks, or search across leading pharmacy online references.

UpToDate : is an evidence–based knowledge system authored by physicians to help clinicians in making right decisions at the point of care.

USMLE Easy: delivers thousands of online questions covering all the disciplines and organ systems covered in the USMLE exam.

Drugdex (Micromedex): is a resource to support clinical medication and therapy decisions, quality improvement and patient education requirements through innovative, market-leading products and services.

Medline Complete: provides access to thousands of medical journals covering medicine, pharmacy, dentistry, medicine, the health care system, Pre-clinical sciences, and much more.

Lecturio: is an e-learning portal for Medical students.

Coverage: All relevant medical & pre-medical topics.5,000+ video lectures, 13,000+ recall questions, 1,200 + textbook articles, USMLE Step1 Qbank with over 1,500 board-style questions. GMU Users can access from GMU Central library

Medicines Complete : (BNF)

Medicines Complete database provides immediate online access to up-to-date drug information sourced from an extensive range of the world's most trusted resources. Its covered British National Formulary (BNF) and British National Formulary for Children.

TRIP (Turning Research into Practice)

TRIP (Turning Research in to Practice) is a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence to support their practice and/or care. TRIP database is a great way for health professionals to obtain trusted answers for their clinical questions.

It simultaneously searches evidence-based sources of systematic reviews, practice guidelines, and critically appraised topics and articles. Trip allows clinicians to search across other content types including images, videos, patient information leaflets, educational courses and news.

Trip Pro is the most advanced version of Trip it has extra content and functionality, including:

100,000+ extra systematic reviews

Medical images and videos

Physioplus

Physioplus database provides physiotherapists all over the world with the resources they need to support their lifelong career and to empower the global physiotherapy profession.

It's covered 78 - Books, 113 - Journals, 400 examination techniques and tests with videos, 100 manual therapy techniques with videos, etc.

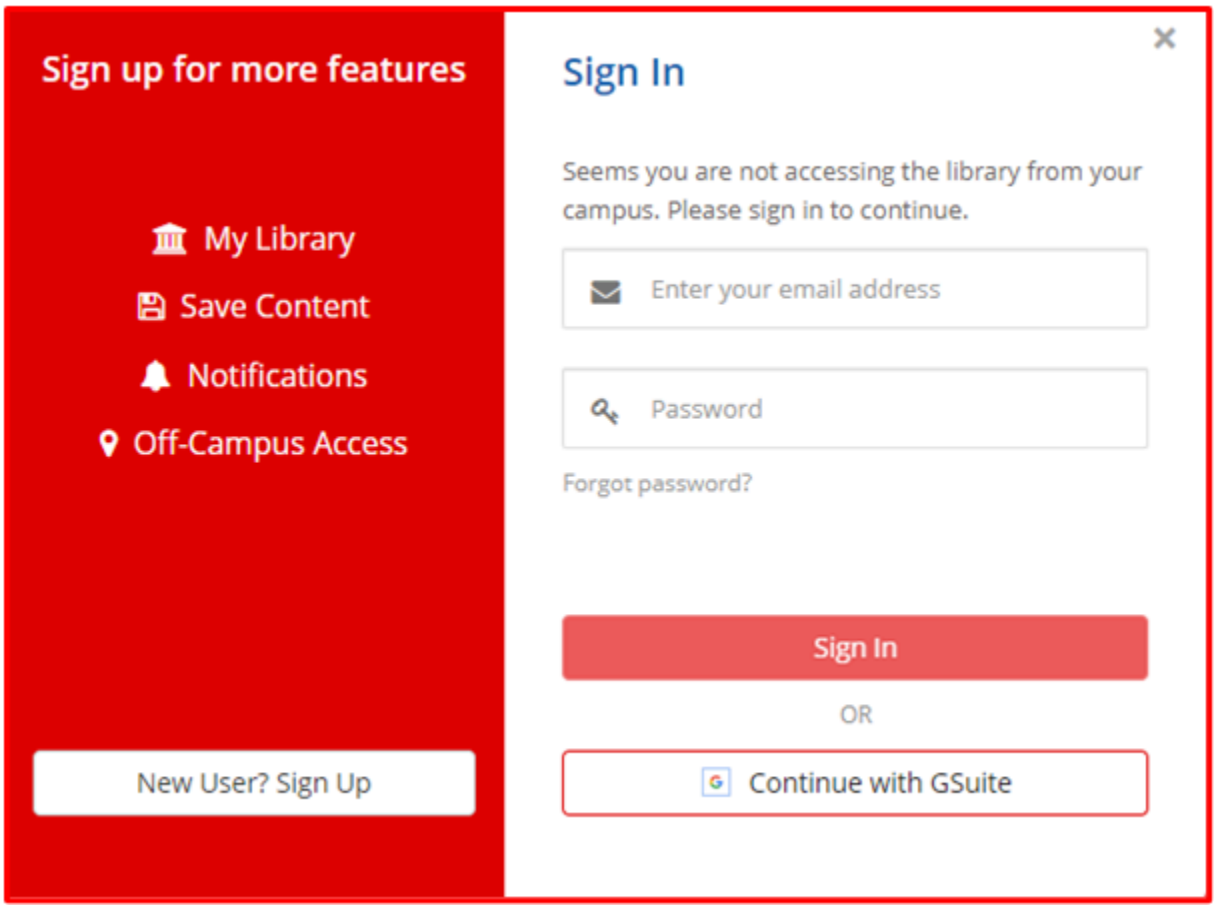
Library Software: AutoLib System

GMU library uses "AutoLib System" and the National Library of Medicine USA classification system. The user can search the catalogue by author, title, subject, ISBN number or key word.

GMU Library Online Catalogue

https://gmu.ac.ae/gmu-library/online-catalog/

The GMU Library's online catalogue contains a record of all the learning resources available in the library. The Library uses the Library of Congress Classification and the user can search the catalogue by title, author, subject, ISBN & keyword. The GMU catalogue contains access details of books & electronic resources.



9. Exam system security

9.1. Procedures for security of testing

GMU is using Examsoft to assess the courses and programs outcomes, which enables faculty members to download the assessment-related report immediately after the exams to take appropriate actions for the enhancement of learning and assessments as well.

ExamSoft's digital assessment platform allows delivering secure assessments without the need for a persistent WiFi connection. Faculty can save time and costs by minimizing the need for expensive live proctoring/invigilation while eliminating virtually all forms of academic dishonesty.

Actionable Student Assessment Data Starts with Exam Security, Examsoft provides confidence data collected hasn't been compromised without safeguards against cheating and dishonesty, which requires an additional level of security, that colleges and programs must provide. The following are the computer-based testing security procedures provided by Examsoft

- ***Device Locking:*** Examsoft provides completely locks down the student device itself, and works without the use of a WiFi connection.
- ***Auto-Randomizing:*** Examsoft has the ability to auto-randomize both questions and answers, for one or multiple exam variations, can make it significantly more difficult for students to copy specific exam items for other students to use in the future.
- ***Expanded Solutions:*** Examsoft can integrate expanded product solutions, like student ID verification and virtual remote proctoring/invigilation capabilities, can add truly unmatched exam security and effectively prevent virtually all forms of academic dishonesty.
- ***Question Review:*** Examsoft has another key element for more advanced exam security features revolves around maintaining a secure and controlled environment in which students can immediately review the correct answers to any questions they missed once an exam is completed. This way, educators avoid running the risk of exam questions being erroneously shared with other students.
- ***Category Tagging:*** With capabilities that allow for customizable category tagging, student performances can be measured against specific learning outcomes. Students can be provided rationale and meaningful feedback without the need to review or distribute old exam questions—protecting exam integrity and ensuring questions can be reused multiple times, on multiple exams

Moreover, *the following is a adopted to ensure the exam integrity in DL:*

The course coordinator shall:

1. Prepare an exam blueprint to show the alignment of questions to the course learning outcomes and submit it to the College Assessment Committee.
2. Create the exam and upload the questions on the University examination platform 5 days at least before the exam.
3. Keep all questions and options randomized.
4. Prepare proctoring links and share it with invigilators and students one day at least before the exam.

Invigilators shall

1. Open the proctoring software 15 minutes before the exam.
2. Ensure that all students open their camera and microphone during the exam time.
3. Record the whole session.
4. The recorded sessions shall be forwarded to the assessment committee.
5. Report any incidence of cheating/misconduct.
6. Ensure that students are not using headphones and their face and shoulders are appearing in the camera.
7. Not allow students to leave the proctored session except at the end of the exam time or after all other students submit the exam.

The College Assessment Committee shall

1. Ensure that the course coordinator has created the exam and kept it password protected and hidden.
2. Review the quality of questions and its alignment with the course learning outcomes as per the exam blueprint prepared by the course coordinator.
3. Keep records for all recorded invigilated sessions and check them if there is misconduct/cheating reported by the invigilator.

Students shall:

1. Join the proctored session 15 minutes before the exam.
2. Open the camera and show the surroundings before starting the exam.
3. Keep the camera and microphone open during the whole exam session.

4. The camera angle shall show clear view of the student and his screen simultaneously.
5. Keep their face and shoulders appearing within the camera frame.
6. Not leave the proctored session except at the end of the exam time or after all other students submit the exam. Permission shall be taken from the invigilator before leaving.
7. Be sitting in a room with good lighting.
8. Keep the room surroundings completely silent.
9. Report any technical problem immediately to the invigilators and work with them to address it.

9.2. Authentication of examinees

GMU is building up a system to be used for examinees' authentication for distance learning courses and programs;

9.2.1. Unique credential for each student and password for each exam

9.2.2. Requiring students to complete and submit an online attendance form using personalized entry codes to sit the examination.

9.2.3. Use unique personalized challenge questions as authentication prior to the exam.

9.2.4. There should be a clear indication that students are expected to be online 15 minutes prior to the start of the exam in order to:

9.2.4.1. Have time to undergo and pass the authentication process.

9.2.4.2. Enable a second attempt at authentication if the student does not pass the first one.

9.2.4.3. Have a final person-to-person contact process by a proctor to identify what is impeding the process after second attempt not passed.

9.2.5. If students cannot pass the challenge question barrier, they will then be required to sit a later invigilated examination.

9.2.6. Starting and ending times are the same regardless of the timing zone.

9.2.7. Use of the webcams with a full invigilated recording of the student during the exam, with angle ensuring clear view of the student and his screen simultaneously.

10. Copyright and intellectual property policies (Link)

10.1 Introduction and Definition.

The GMU encourages the creation of scholarly works as an integral part of its mission. GMU participation in the development, marketing, and dissemination of educational materials has as its aim the improvement of the quality, effectiveness, and efficiency of student learning and of faculty and staff development. The GMU recognizes its obligation to transfer technology and useful discoveries to society. With respect to all types of intellectual property, the rights and obligations of GMU, its employees and students and other third parties shall be governed by this policy. To the extent permitted by this policy, individuals may enter into contracts with GMU to address intellectual property, in which case the contract terms shall control, provided that the contract was entered into in a manner consistent with this policy.

For purposes of this Section the following terms shall have the following meanings:

a. "Electronic" shall mean relating to technology having electrical, digital, magnetic, wireless, optical, electromagnetic, or similar capabilities.__

a. "Written" or "in writing" shall include information created, generated, sent, communicated, received, or stored by electronic means, including without limitation email, telecopy, and facsimile transmissions.

b. "Natural person or persons" means natural person or persons involved in the creation or development of intellectual property.

10.2 Copyrights.

GMU participation in the development of copyrightable works raises questions concerning the ownership and use of materials in which GMU has become an active and intentional partner through substantial investment of resources. This policy is established to clarify the rights of the natural person or persons and the GMU regarding ownership and use of copyrightable materials in the absence of a valid written agreement between the natural person or persons and GMU. The GMU acknowledges the right of faculty and staff members and students to prepare and publish materials that are copyrightable in the name of the natural person or persons and that may generate royalty income for the natural person or persons. (In this policy, "the natural person or persons" is to be construed broadly as including producers of creative works in the arts and sciences and creators of literary or scholarly writing.)

10.2.1 Coverage.

The types of materials to which this policy applies include:

a. Study guides, tests, syllabi, bibliographies, texts, books, and articles.

a. Films, filmstrips, photographs, slides, charts, transparencies, illustrations, and other visual aids.

b. Programmed instructional materials.

c. Audio and video recordings.

d. Simultaneously recorded live audio and video broadcasts.

e. Computer software, including computer programs, procedural design documents, program documents, and databases as defined below:

- "Computer program" means a set of instructions that direct a computer to perform a sequence of tasks.
- "Procedural design document" refers to material that describes the procedural steps involved in the creation of a computer program.
- "Program document" refers to material created for the purpose of aiding the use, maintenance, or other interaction with a computer program.
- "Data base" means a collection of data elements grouped together in an accessible format.

g) Other copyrightable materials, including materials generated in the production of any of the above works.

10.2.2 Assignment of Ownership:

Faculty, staff members, and students retain all rights in the copyrightable materials they create except in the cases of "GMU-Sponsored Materials" as defined in Subsection B-2-b below, materials covered by a Grant or Contract as discussed in Subsection E below, and materials covered by a valid written agreement between the natural person or persons and the GMU as discussed in Subsection B-5 below. Faculty members, staff members, and students shall co-operate with reasonable requests from GMU for the creation of any documents and records needed to vest and memorialize GMU's rights, if any.

a. Retention of Rights. Except as otherwise provided in Subsection B-2-b, the natural person or persons retain the rights to: (1) copyrightable works produced while on sabbatical leave; (2) study guides and similar materials; and (3) works prepared as part of the general obligation to produce scholarly or other creative works of the natural person or persons, such as, but not limited to articles, books, musical compositions, and works of art.

a. GMU-Sponsored Materials. Materials are "GMU-Sponsored Materials" within the meaning of this policy if the natural person or persons: (1) was commissioned specifically in writing by GMU or one of its distinct units to develop the material as part of his or her employment duties and the writing states that the resulting works would be considered "GMU Sponsored"; (2) received extra pay from GMU to prepare the specific materials pursuant to a valid written agreement providing that the extra pay is consideration for the preparation of the specific materials; (3) received release time from regular duties to produce the specific materials; or (4) made "substantial use" of GMU resources in the creation or development of the specific materials, provided however that the use of GMU resources regularly and customarily available to him/her as part of his/her regular employment or as part of his/her regular academic enterprise, shall not be considered "substantial use" of GMU resources.

10.2.3 Registration of Copyrightable Materials:

Absent a valid written agreement otherwise, GMU Sponsored Materials are to be registered in the name of the university or its' assignee. GMU or its designee has the right to file registrations of GMU Sponsored copyrightable works.

10.2.4 Royalties and Income.

a. Out of the gross receipts from royalties and other income from sale or rental of GMU Sponsored Materials, the GMU, college, department, other unit, or GMU's designated agent may recover reasonable expenses that it incurred in the development, marketing, or dissemination of the materials.

a. In the absence of a valid written agreement to the contrary, the net proceeds are distributed between the natural person or persons, GMU or its designated agent, and the 'college or service unit of the natural person or persons. At least half of the share allocated to the college or other unit is given to the department of the natural person or persons for use in furtherance of its goals.

b. GMU retains a right to royalty-free internal use of any materials designated GMU Sponsored under this policy.

10.2.5 Written Agreements:

a. The Vice Chancellor Academics represents GMU in negotiating agreements with the natural person or persons pursuant to this policy. The natural person or persons of copyrightable material may negotiate with the Vice Chancellor Academics and arrive at a mutually agreeable contract. The Vice Chancellor

Academics consults with the dean or departmental administrator of the department of the natural person or persons in drafting these agreements. (For purposes of this policy, "dean" includes persons with equivalent administrative capacities.)

a. Valid written agreements concerning copyright ownership, use of copyrighted materials, and distribution of royalties and income from copyrightable works which are entered into by one or more natural person or persons and the Vice Chancellor Academics supersede the provisions of this section. ' To be valid, such agreements must (1) comply with the terms of any relevant Grants or Contracts as discussed in Subsection E below, (2) comply with the policies of the GMU Board of Regents, (3) comply with GMU policies and 4) comply with local law.

10.2.6 Use of GMU-Sponsored Materials.

Use of GMU Sponsored Materials under this policy is subject to the following conditions:

a. Internal Use. Internal use is use by anyone employed by GMU, or attending the GMU as a student, while acting within the scope of his or her employ or academic enterprise, or any agent of GMU acting within the scope of his or her agency, either directly or through a grant or contract, or by any GMU unit. Internal use of GMU Sponsored Materials for the same general purpose for which they were developed, and revision of such materials, do not require the prior approval or notification of any of the natural person or persons. However, for as long as any natural person or persons involved in the creation or development of GMU Sponsored Materials remains a GMU employee or student, such natural person or persons may, in a professionally appropriate manner, propose revisions of the material.

a. External Use. External use is any use other than that defined in Subsection B-6-a. above. Licensing or sale of GMU Sponsored Materials for external use must be preceded by a valid written agreement between the natural person or persons and GMU or the GMU's designated agent specifying the conditions of use, and including provisions concerning updating or revision of the materials.

10.2.7 Protection.

a. Allegations of unauthorized use or copyright infringement of GMU Sponsored Materials should be made to the Intellectual Property Committee constituted by the Vice Chancellor Academics for investigation. The committee will recommend appropriate action to the Vice Chancellor Academics.

a. If such action is initiated by GMU alone or in concert with the natural person or persons, the costs are borne by GMU or GMU's agent. Proceeds from the action in excess of costs are shared as provided in Subsection B-4-b.

b. If the natural person or persons involved in the creation or development of the allegedly infringed intellectual property desires to institute a suit and GMU decides not to act, GMU will co-operate either by assigning to the natural person or persons such rights as are necessary for the natural person or persons to pursue redress or by some other reasonable method acceptable to GMU. The costs of the suit will be born by the natural person or persons desiring to sue, who will also obtain any monetary relief obtained from the alleged infringer due to the prosecution of the suit.

10.2.8 Liability. When either GMU or the natural person or persons involved in the creation or development of materials copyrighted by GMU or its assignee is alleged to have violated personal or property rights, GMU or its designated agent assumes responsibility for the defense against such allegation and the satisfaction of any judgment rendered against GMU or the natural person or persons.

10.2.9 Waiver.

Any person involved in the development of copyrightable materials governed by Section B waives any claim that otherwise legal use of the material by GMU, research council, its agents, employees, distinct units creates legal liability by GMU, its agents, employees, distinct units research council on any theory of indirect liability for allegedly infringing actions of third parties.

10.3 Protectable Discoveries

"Protectable Discoveries," for purposes of this section is defined to include anything which might be protected by utility patent, plant patent, design patent, plant variety protection certificate, maskwork, or trade secret. All Protectable Discoveries made by GMU employees at any of its facilities in the course of programs carried on by GMU or made by persons in the course of working on such programs or projects under contracts or agreements with GMU belong to GMU. The natural person or persons involved in the creation or development of such Protectable Discoveries shall assign to GMU all such (1) Protectable Discoveries, (2) applications for legal protection of such Protectable Discoveries, and (3) utility patents, plant patents, design patents, and plant variety protection certificates resulting from such Protectable Discoveries. Absent a valid written agreement to the contrary, any Protectable Discoveries made by GMU employees or such other natural person or persons identified above with the use of facilities (other than library resources, normal office use, incidental use of the GMU internet network consistent with GMU

internet use policy, and other facilities for which the person has paid use fees) owned by GMU or made available to it for project or research purposes are deemed to have been made in the course of working on a research program or project of GMU.

10.3.1 Ownership by Other than GMU.

A Protectable Discovery made by a natural person or persons wholly on his or her own time outside of his or her duties at GMU and without the use of GMU facilities (other than library resources, normal office use, incidental use of the GMU internet network consistent with GMU internet use policy, and other facilities for which the person has paid use fees) belongs to that natural person or persons, even though it falls within the field of competence relating to the person's GMU position. This provision also allows any Protectable Discovery made by a natural person or persons in the course of private consulting services carried out by the person in conformance with the GMU's policy on professional consulting and additional workload to be assigned to the consulting sponsor.

10.3.2 GMU and Research Advisory Board Processes. GMU agrees that all Protectable Discoveries made by a natural person or persons in the course of working on a GMU research program or project must be submitted to the Research Advisory Board (RAB) for acceptance. If a Protectable Discovery is accepted by the RAB for development, management, marketing, licensing, or assignment in any manner for the purposes of this policy, GMU must cause such property to be conveyed, assigned, or transferred to RAB. RAB has full power to manage such rights and to enter into contracts and licensing concerning such rights, including the right to join in agreements with other nonprofit intellectual property-management entities.

a. Upon submission of intellectual property to RAB, RAB must make a formal written decision to pursue commercialization for that property within three months or return the rights to GMU. If RAB does not file for protection of the intellectual property within eighteen months of the date the disclosure was submitted, the rights are returned to GMU. If RAB submits a provisional patent application for intellectual property protection, a "full" and non-provisional patent application must be submitted within nine months of the date of the submission of the provisional patent or the rights to the property are returned to GMU. The property may remain with RAB for a second eighteen-month period if both GMU and RAB agree.

a. The RAB shall submit semi-annual reports, as long as it owns the property, to both the inventor/natural person or persons of and GMU on 1) the status of the application until such time that protection is granted, 2) the marketing activities for the property being serviced, and 3) an accounting for funds received from the property. In the event that RAB has been unsuccessful in transferring a property or filing a patent application within three years after its first acceptance, RAB must notify GMU in writing and the property shall be transferred to GMU.

b. If RAB determines not to pursue commercialization of a Protectable Discovery that it has accepted it shall re-convey, assign, and transfer the Protectable Discovery back to the University. The University may elect to pursue commercialization of the Protectable Discovery or, subject to controlling federal law, reconvey, assign and transfer the Protectable Discovery to the natural person or persons involved in the creation of the intellectual property.

10.3.3 Proceeds.

RAB will make provision to share the net proceeds, management, and licensing of any Protectable Discovery assigned to RAB as follows:

a. Legal and development expenses incurred by RAB constitute a lien on the net proceeds until paid.

a. Absent a valid written agreement to the contrary, the net proceeds in excess of such expenses shall be distributed between the natural person or persons; GMU and to the college or service unit of the natural person or persons. At least half of the share allocated to the college or other unit is given to the department of the natural person or persons for use in furthering its goals.

10.3.4 Ownership Questions.

Questions as to the ownership of a Protectable Discovery or division of proceeds between persons involved in development of such discoveries and departments are referred in the first instance to the Intellectual Property Committee. The disputes will be decided in accordance with Section (D).

10.3.5 Dispute Resolution

From time to time, disputes will inevitably occur concerning ownership of the intellectual property (copyrights and Protectable Discoveries) contemplated in this Section. Resolution of such disputes shall be achieved by the following procedure:

10.3.5.1 Intellectual Property Dispute Committee.

The Intellectual Property Dispute Committee (IPD Committee) shall be an Ad Hoc Committee formed when necessary by appointments made by the Vice Chancellor Academics, in consultation with the Chair of College Council and the Graduate Student Council. Normally the IPD Committee shall be composed of five faculty members and two graduate students. The Vice Chancellor Academics shall appoint the chair from among the faculty members. In the event the Graduate Student Council shall fail to appoint one or more student members, the IPD Committee may nonetheless be formed by the Vice Chancellor Academics and conduct business without the Graduate Student Council student representatives.

10.3.5.2 Recommendation by the Intellectual Property Dispute Committee.

The IPD Committee considers, investigates, and makes recommendations toward resolution of disputes concerning (1) ownership of copyrightable materials and Protectable Discoveries, and (2) allegations or unauthorized use or copyright infringement of GMU Sponsored Materials. It reviews all relevant evidence submitted to it before making its recommendation to the Vice Chancellor Academics. The IPD Committee's recommendation is to be made no later than 60 days after receiving the matter for consideration. The IPD Committee's recommendation is determined by a majority of all its members voting by secret ballot at a meeting at which over one-half its appointed members are present. No member may participate in any matter in which his or her ownership rights are being determined.

10.3.5.3 Decision by the Vice Chancellor Academic. After receiving the recommendation of the IPD Committee, the Vice Chancellor Academics makes a decision concerning ownership or infringement. The Vice Chancellor Academics decision is made no later than 30 days after receiving the IPD Committee's recommendation. That decision is transmitted in writing to the natural person or persons and to his or her departmental administrator and dean.

10.3.5.4 Appeal of the Decision of the Vice Chancellor Academics. The decision of the Vice Chancellor Academics may be appealed to the Chancellor of the University. Further appeals shall be made as from any other decision of an administrative body under the local laws in effect from time to time.

10.4 Special arrangements for Federal and Private Grants

Nothing in this policy shall prevent GMU from accepting research grants from, and conducting research for, agencies of the government upon terms and conditions under applicable provisions of federal law or regulations that require a different disposition of rights in any form of intellectual property. Moreover, nothing herein

shall prevent cooperative arrangements with other agencies for research. Where receipt of a grant in support of research from any nonprofit agency or group may be dependent upon acceptance of terms and conditions of the established intellectual property policy of the grantor that differ from those stated herein, GMU may specifically authorize acceptance of such grant upon such terms and conditions. GMU may also specifically authorize contractual arrangements with an industrial sponsor for different disposition of rights in any form of intellectual property resulting from its sponsored research.

10.5 Record Keeping.

Strict record-keeping procedures in keeping with practices of this university are recommended in order to safeguard the property rights of GMU or the faculty member in research and potentially patentable results.